DETAILED ACTION

Note

The arguments filed in the appeal brief are persuasive and the rejection is removed. Specifically, the groups attached to the aluminum compound are not arylalkyl or substituted arylalkyl, but form ether bonds.  Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sanchez et al. (U.S. Pat. 5,700,880).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4-7, 10, 12, 14, 16, 17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braune et al. ("An Efficient Method for Controlled Propylene Oxide Polymerization: The Significance of Bimetallic Activation in Aluminum Lewis Acids") in view of Sanchez et al. (U.S. Pat. 5,700,880).

Regarding claims 1, 2, 4, 5, 10, 12, 14, and 16: Braune et al. teaches a process for preparing homopolymers of oxiranes/PO (propylene oxide) polymerization (title) comprising carrying out the polymerization in the presence of a quaternary ammonium (page 65, 1st column, last 5 lines) of the formula NR_4-X (NEt_4Cl) where R is alkyl and X is halogen. Also present is a mononuclear organylaluminum compound $[Al(L)Cl_2]$ (page 65, 1st column, last 4 lines).

Not disclosed is a mononuclear organylaluminum compound of the instant formula. However, Sanchez et al. teaches a method of polymerizing oxyalkylene/oxiranes monomers (abstract) using trialkylaluminum (col. 3 lines 1-5). Braune et al. and Sanchez et al. are analogous art since they are both concerned with the same field of endeavor, namely polymerizing oxiranes monomers using mononuclear aluminum compounds. At the time of the invention a person having ordinary skill in the art would have found it obvious to substitute the aluminum compound of Sanchez et al. for the aluminum compound of Braune et al. and would have been motivated to do so since the resultant film exhibits good mechanical behavior and an elongation of greater than 1000%, as evidenced by Sanchez et al. (example 1).

Regarding claims 6, 17, 19, and 20: Braune et al. teaches the ratio of Lewis acid/quaternary ammonium to aluminate/organylaluminum compound is 1.5 (page 65 second column, end of first full paragraph and experiments 7 and 8).

Regarding claim 7: Braune et al. teaches adding the quaternary ammonium/NEt_4Cl first (see page 67, Experimental Section).

Claims 3, 11, 13, 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braune et al. ("An Efficient Method for Controlled Propylene Oxide Polymerization: The Significance of Bimetallic Activation in Aluminum Lewis Acids") in view of Sanchez et al. (U.S. Pat. 5,700,880) as applied to claim 1 or 2 above and in view of Yu (U.S. Pat. 5,010,139).

Regarding claims 3 and 11: Braune et al. teaches the basic claimed composition as set forth above. Not disclosed is the copolymer with comonomers selected from styrene, α-methylstyrene, butadiene, isoprene or mixtures of these. However, Yu teaches a copolymer of ethylene oxide with a comonomer of a styrene (col. 5 line 67-col. 6 line 7). Braune et al. and Yu are analogous art because they are both concerned with the same field of endeavor, namely polymerization of oxiranes using an organoaluminum compound (col. 7 line 35). At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the styrene monomer of Yu with the polymer of Braune et al. and would have been motivated to do so because adding a cyclic comonomer to ethylene oxide significantly improves the antistatic performance of the polymer, as evidenced by Yu (col. 4 lines 16-26).

Regarding claim 13: Braune et al. teaches the quaternary ammonium (page 65, 1st column, last 5 lines) of the formula NR_4-X (NEt_4Cl) where R is alkyl and X is halogen.

Regarding claim 15: Sanchez et al. teaches a trialkylaluminum compound and a person having ordinary skill in the art would substitute the aluminum compound of Braune et al. for the aluminum compound of Sanchez et al. for the reasons set forth regarding claim 1 above.

Regarding claim 18: Braune et al. teaches the ratio of Lewis acid/quaternary ammonium to aluminate/organylaluminum compound is 1.5 (page 65 second column, end of first full paragraph and experiments 7 and 8).

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braune et al. ("An Efficient Method for Controlled Propylene Oxide Polymerization: The Significance of Bimetallic Activation in Aluminum Lewis Acids") in view of Sanchez et al. (U.S. Pat. 5,700,880) as applied to claim 1 above and in view of McGee et al. (US 2002/0010268).

Regarding claims 8 and 9: Braune et al. teaches the basic claimed process as set forth above. Not disclosed is a first polymerizing a comonomer and then polymerizing the polyoxirane while concomitant use of alkali metal compound is made. However, McGee et al. teaches first polymerizing a polyolefin/comonomer, and then polymerizing an oxirane containing monomer such as ethylene oxide or propylene oxide to form a block copolymer while using an alkali metal compound such as potassium hydroxide or sodium methoxide (para. 29). Braune et al. and McGee et al. are

analogous art because they are both concerned with the same field of endeavor, namely the process of making oxirane polymers. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the block copolymer reaction scheme of McGee et al. with the process of Braune et al. and would have been motivated to do so for such desirable properties as producing an olefin block copolymer with excellent adhesion and a much lower cost than previously used adhesion promoters, as evidenced by McGee et al. (para. 12).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan McCulley whose telephone number is (571)270-3292. The examiner can normally be reached on Monday - Thursday 7:30-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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